STATUS REPORT

ON THE

SHORT-TAILED ALBATROSS

DIOMEDEA ALBATRUS

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Endangered Species Program
Ecological Services
U.S. FISH AND WILDLIFE SERVICE
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NOTICE:

The information contained in this report is from a dynamic biological database which is constantly updated. It reflects the status of information available on the short-tailed albatross in 1993; however, new data on this subject will be generated in the future by the Alaska Natural Heritage Program and the U.S. Fish and Wildlife Service. The Alaska Natural Heritage Program should be consulted before citing this document or basing management decisions on its contents.

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Taxon Name: *Diomedea albatrus* Pallas

Common Name: short-tailed albatross
coastal albatross
Steller's albatross

Family Name: Diomedeidae

States/Nations: California, Oregon, Washington, Alaska, Hawaii in U.S.A
Canada, Japan, Russia

Federal Status: Federally Endangered throughout its range, except U.S.

Recommended Status: Federally Listed within the U.S.

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I. SPECIES INFORMATION

1. CLASSIFICATION AND NOMENCLATURE

A. Species of intraspecific taxon
   1. Scientific name
      a. Binomial/trinomial - *Diomedea albatrus* Pallas, 1769
      b. Full bibliographic citation
         Pallas, 1769. *Spicilegia Zoologia*, Vol. I, Fasc. 5, p. 28. (in American Ornithological Union. 1957. Checklist of North American Birds. 5th ed.).
   2. Pertinent synonyms - None
   3. Common names - Short-tailed albatross
      Steller's albatross
      Coastal albatross
   4. Size of genus - 13 living species of albatrosses

B. Family classification
   1. Family name - Diomedeidae
   2. Pertinent synonyms - None
   3. Common name for family - Albatross Family

C. Major animal group - AVES

D. History of knowledge of taxon

The short-tailed albatross, *Diomedea albatrus,* is globally recognized as a distinct species (Tuck, 1978). Discovered by George Steller in the 1740's, it was described in 1769 (AOU Checklist, 1983) by P.S. Pallas in *Spicilegia Zoologica*, from a specimen taken offshore of Kamchatka, Russia. It was not until 1893, however, that it was differentiated from the Laysan albatross, *Diomedea immutabilis*, (Austin, 1949) for which the adult form resembles the juvenile short-tailed albatross. The short-tailed albatross is of the order of tube-nosed marine birds, Procellariiformes, and the family of albatrosses, Diomedeidae. Tickell (1973) suggests they may be more closely related to the royal albatross, *Diomedea epomophora*, and wandering albatross, *Diomedea exulans*, of the southern hemisphere than to other North Pacific albatrosses.

2. PRESENT LEGAL AND FORMAL STATUS

A. International:

1. Present designated/proposed protection or regulation:

Intensive commercial harvest of short-tailed albatrosses at Japanese breeding colonies took place, primarily, between 1885-1940. The commercial harvest of short-tailed albatrosses (refer to Section 4B Significance of Taxon - Human) was first banned by the Japanese through a government edict in 1907 because the population had plummeted to dangerously low numbers. However, they continued to be legally taken as "game birds" for several decades thereafter (Austin, 1949). In 1933, the Japanese government designated Torishima Island off limits to feather hunting to protect short-tailed albatrosses, but this was for a limited 10 year period during which they offered no enforcement. In 1947, the Japanese declared the short-tailed a protected species and, in 1958, further declared Torishima Island a National Monument, thereby protecting all its flora and fauna (Hasegawa and DeGange, 1982). Dates vary depending on the source, but soon thereafter the short-tailed was recognized by the International Council for Bird Preservation as an endangered species (King, 1981). This action by the international community encouraged the Japanese, in 1962, to designate short-tailed albatrosses a Special National Monument (Hasegawa and DeGange, 1982). In 1972, the Japanese further designated the short-tailed albatross a Special Bird for Protection (King, 1981).

Certain United States actions have international implications for the species. Because of the inclusion of the short-tailed albatross on the "foreign" list of Endangered species under the 1969 Endangered Species Conservation Act, it was, in 1975, afforded protection by the Convention on International Trade in Endangered Species of Wild Flora and Fauna Treaty (CITES) (Quinlin, 1985). The CITES Treaty protects the short-tailed albatross through prohibiting its commercial import or export or the trade of its parts across international borders.

Under the Endangered Species Act 1973, the United States also is committed to the international community to conserve and protect endangered species pursuant to international agreements and treaties: 1) migratory bird treaties with Canada and Mexico; 2) Migratory and Endangered Bird Treaty with Japan; 3) Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere; 4) International Convention for the High Seas Fisheries of the North Pacific Ocean, and; 5) other international agreements (U.S. Fish and Wildlife Service, 1988).

2. Current international status recommendations:

None known.

B. National:

1. Review of past status:

Pursuant to the 1969 Endangered Species Conservation Act (ESCA), the Secretary of Interior listed the short-tailed albatross an Endangered "foreign" species but not an Endangered "native" species (U.S. Fish and Wildlife Service Federal Register 35(106) June 2, 1970). According to the 1969 Act, the procedure for native species listing required official notification to the governor of each state within which a species resided. Since available data were interpreted as not supporting resident status for the short-tailed albatross, no governors were contacted, and the native population was not listed (Sheppard, 1993 pers. comm.). In 1973, the Endangered Species Act (ESA) repealed the 1969 ESCA and combined "foreign" and "native" species into a single list. This resulted in a number of species, including the short-tailed albatross, being listed as Endangered throughout their range, except within the United States. In the late 1970's, the lack of "native species notification" technicality was viewed as causing the short-tailed albatross to be omitted from listing, which did not represent the intention of the U.S Fish and Wildlife Service (U.S. Fish and Wildlife Service Federal Register 45(145) July 25, 1980). However, no grandfather clause existed to exempt the short-tailed albatross from the native species notification procedures (Sheppard, 1993 pers. comm.). In summary, the short-tailed albatross is listed Endangered species throughout its North Pacific Ocean range, excluding the United States (U.S. Fish and Wildlife Service Federal Register 45(145) July 25, 1980).

In 1980, it was the purpose of the U. S. Fish and Wildlife Service to list the short-tailed albatross within the United States (U.S. Fish and Wildlife Service Federal Register 45(145), July 25, 1980; U.S. Fish and Wildlife Service 1980, Endangered Species Bulletin 5(8)). The U.S. Fish and Wildlife Service proposed listing the short-tailed albatross as Endangered within the United States, but the proposed rule was neither finalized or withdrawn (Jean Cochrane, 1993 pers. comm.).

2. Present designated or proposed protection or regulation:

Pursuant to the ESA, the United States territory only extends three miles offshore and the short-tailed albatross, as a "foreign" species, is listed as Endangered beyond the 3-mile limit. Whereas waters beyond three miles are regulated for United States fisheries and off-shore mining to the 200-miles limit, the National Marine Fisheries Service and the Minerals Management Service both acknowledge and treat the short-tailed as Endangered within the 3-mile to 200-mile zone (Mony, 1983 pers. comm.; Cochrane, 1993 pers. comm.).

3. Other current formal status recommendations:

Based on increased sightings in the North Pacific Ocean, the U.S. Fish and Wildlife Service Ecological Services Office in Anchorage has contracted for this status report. Coincidentally, the U.S. Fish and Wildlife Hawaii Office drafted a proposed rule to list the species in the United States (Kershaw, 1993 pers. comm.).' If it is federally listed, down-listing and de-listing criteria will be established.

C. State:

1. Present designated or proposed protection or regulation:

In Alaska, the short-tailed albatross is listed as endangered (State of Alaska, Alaska Statutes, Article 4. Sec 16.20.19). The endangered species statute identifies the Commissioner of the Alaska Department of Fish and Game as responsible for determining those species whose population numbers are low or decreasing in a manner which threatens the species' existence. In preparation for making this determination, the commissioner is obligated to review and seek advise from knowledgeable parties. In a letter to Commissioner Noerenberg, J.C. Bartonek (1972, in litt.) recommended endangered status because the short-tailed albatross occurs or "was likely" to occur in state waters within the 3-mile limit of state jurisdiction.

3. DESCRIPTION

A. General nontechnical description:

The short-tailed albatross is a very large pelagic bird with long, relatively narrow wings adapted for soaring low over the water. Its pink bill is hooked with a blue tip and it has external, tubular nostrils. It is the only adult North Pacific albatross with an entirely white back and a white head with yellow/gold crown and nape.

B. Technical description:

There are three species of North Pacific albatrosses: Laysan albatross, *Diomedea immutabilis;* black-footed albatross, *Diomedea nigripes,* and; short-tailed albatross, *Diomedea albatrus*. The short-tailed albatross is the largest of the three, with a wing span of 84 in and a length of 37 in (Farrand, 1983). The adult plumage of the short-tailed is white, including the back between the wing and the underwing. The distal portion of the upperwing wing coverts and primaries and the leading edge of the wings are black/dark brown. There is a black/dark brown band on the tip of the tail. The white head has a crown and nape which are diffused with

yellow/gold. The hooked bill is pink with a bluish, decurved tip. The bill is larger than that of the black-footed and Laysan albatrosses, with a thin, but conspicuous, black line extending around the base. Typical of the order Procellariiformes, short-taileds have external tubular nostrils on either side of the middle plate of the upper mandible. Their legs are variously referred to as pale blue or flesh colored, depending on age. Fully fledged juveniles are completely black/dark brown. This color pattern is progressively replaced by white as the bird matures, beginning with the bill, face, and legs. The bills of young birds are pinkish and their legs are flesh-colored (Hasegawa and DeGange, 1982). The sexes are basically monomorphic, with only slight size variation in the head and bill (Frings and Frings in Yesner, 1976).

C. Local field characters:

Short-tailed albatrosses are larger and heavier than the Laysan and black-footed albatrosses of the North Pacific Ocean. The bill is also proportionally larger than either of those species, with a thin, but conspicuous, black line extending around the base. The entirely white back distinguishes it from the Laysan albatross and, easily, from the dark bodied black-footed albatross. The subadult short-tailed is distinguished from adult black-footed albatrosses by having a black hood and throat, white patches on the upperwing, and dark undertail coverts and dark underside of tail. Young short-taileds may resemble the black-footed albatross, but their pale bills and legs distinguish them (Tuck, 1978; Roberson, 1980).

D. Identifying characteristics of material which is in inter-state or international trade or commerce:

Same as 3B and 3C.

4. SIGNIFICANCE OF THE TAXON

A. Natural:

The short-tailed albatross is taxonomically grouped within the order, Procellariiformes, which includes the most abundant seabird to the most rare and the largest seabird to the smallest. This variation expresses a high degree of morphological adaptability within the group. The entire order also is distinguished by having an extended, glandular portion of the stomach which produces a pungent and, possibly, nutritious oil. Albatross chicks appear to be "starvation-adapted" to accommodate the long feeding forays taken by parents. Oil production, which increases during chick rearing, may reflect a survival strategy of importance by maximizing chick maintenance and growth while allowing parents the benefit of extended feeding periods at sea (Nelson, 1979). Tickell (1973)

suggests that short-tailed albatrosses may have a closer phylogenetic relationship with the royal albatross, *Diomedea epomophora,* and wandering albatross, *Diomedea exulans,* of the southern hemisphere than with albatrosses of the North Pacific Ocean, which is of significance in understanding the relationship within groups of closely related species.

B. Human:

The archeological record reveals that short-tailed albatrosses were exploited as food by marine adapted hunter-gatherer peoples from California to the Bering Sea. The contents of middens also identify albatrosses as the greatest contributors to the avian portion of the diet and, until 100 years ago, the short-tailed albatross comprised nearly 95% of all albatrosses utilized (Yesner and Aigner, 1976).

From approximately 1885 to 1903, an estimated 5 million short-tailed albatrosses were harvested from breeding colonies. The feather down was used for quilts and pillows, and wing and tail feathers were used for writing quills; their bodies also were processed into fertilizer and rendered into fat, and their eggs were collected for food (Austin, 1949). The largest colony, at Torishima Island, was inundated by volcanic lava and ash in 1903 and 1939, which further decimated the population. By the mid-1930's, the feather trade industry had reduced that remnant population to less than 50 birds. The industry on Torishima Island was led primarily by the South Seas Trading Company and driven by European and Oriental markets. However, the original company no longer exists and its records have never been located to estimate the number of birds taken (Yamashina in Austin, 1949).

5. GEOGRAPHIC DISTRIBUTION

A. Marine range:

Historically, the short-tailed albatross was common year-round off the western coast of North America (Roberson, 1980), ranging southward from approximately 66 degrees north latitude to 10 degrees north latitude (King, 1981). Reports by Bean, Turner, and Nelson from the 1880's described them as occurring near St. Lawrence Island, north to the Bering Strait, south to the Barren Islands in Lower Cook Inlet, and the Gulf of Alaska (in DeGange, 1981). Other Bering Sea records include the Komandorskie Islands, Diomede Islands, and Norton Sound (AOU Checklist, 1961). Grinnell and Miller (1944) claimed that short-taileds were common off of the California coast in all seasons. Archeological evidence confirms their presence from California to Alaska (Howard and Dodson, 1933; Yesner and Aigner, 1976). As well, they ranged throughout the entire North Pacific Ocean to the coast of China, including the Japan Sea and the Okhotsk Sea. The common synonym of "coastal albatross" reflects the short-tailed's predilection

for nearshore waters. Their presence may coincide with areas of high biological productivity, such as along the west coast of North America, the Bering Sea, and offshore from the Aleutians (Hasegawa and DeGange, 1982).

Sightings since the 1940's indicate the short-tailed albatross, while very few in numbers, is distributed widely throughout its historical range of the temperate and subarctic North Pacific Ocean (Sanger, 1978).

B. Breeding Range:

Historically, short-tailed albatross bred only in the western North Pacific Ocean, south of the main islands of Japan. Hasegawa (1979) and others have identified at least 10 extant and extinct breeding locations on far western North Pacific islands between approximately 23-31 degrees north latitude and 119-143 east longitude (refer to Section 5C Precise Occurrences).

Early naturalists, such as Turner and Chamisso, believed that short-tailed albatrosses bred in the Aleutian Islands because high numbers of birds were seen nearshore during the summer and fall months (Yesner, 1976). Alaska Aleut lore referred to local breeding birds and explorer O. Von Kotzebue reported that Natives harvested short-tailed albatross eggs. But, while adult bones were found in Aleut middens, fledgling remains were not recorded in over 400 samples (Yesner, 1976). Observers may not have known that short-tailed albatrosses are winter breeders in regions to the south and western Pacific Ocean, and Yesner suspected that this species may have been confused with the much smaller northern fulmar, *Fulmaris glacialis,* which does breed in the Aleutians Islands. Given the midwinter constraints on breeding at high latitudes and the known southerly location of winter breeding, it is highly unlikely that summer breeding ever took place.

Only two known breeding colonies are presently active, Torishima Island and Minami-kojima Island. Both are remnant populations from the historic breeding sites known during the 1800's. Sightings have documented several short-taileds in the Hawaiian Islands during the breeding season (refer to Section 5C.5 Precise Occurrences).

C. Precise occurrences:

1. Populations currently or recently known:

Only two breeding populations, or occurrences, are presently known, both in Japan. The largest colony is on Torishima Island, located in the Seven Islands of Izu group approximately 580km south of Tokyo, Japan. It was rediscovered as an active breeding site in 1950. The second colony, on Minami-kojima Island, is in

the Senkaku Islands of the southern Ryukyu Islands group, south of Kyushu, Japan. Dr. Hiroshi Hasegawa rediscovered this colony as active in 1987 (U.S. Fish and Wildlife Service, Biological Opinion Paper, 1989).

Documented sightings or occurrences at sea are included in the attached Appendix North Pacific Ocean Sightings.

2. Populations known or assumed extirpated:

From all accounts, the following identified breeding sites have been extirpated from the western North Pacific Ocean: 1) Mukojima in the Bonin Islands of Japan, 2) Nishinoshima in the Bonin Islands of Japan, 3) Yomeshima and Kitanoshima in the Bonin Islands of Japan, 4) Kita-daitojima of the Daito group of Japan 5) Minami-daitojima of the Daito group of Japan, 7) Okino-daitojima of the Daito group of Japan, 8) Senkaku Retto of southern Ryukyu Islands of Japan, including the Kobisho and Uotsurijima Islands, 9) Agincourt Island, north of Taiwan, 10) Pescadore Islands, of Taiwan, including Byosho Island, and 11) Iwo Jima in the western Volcanic Islands (Kazan-Retto) of Japan (Hasegawa, 1979; King, 1981). However, there may be redundancy among sites because of confusion discriminating between different Japanese names for the same islands and island groups.

3. Locations not yet investigated and suspected to be erroneous reports:

Unknown

4. Locations not yet investigated and believed likely to support other possible natural occurrences:

Unknown

5. Other locations of interest:

Since the mid 1970's, birds have been observed on Midway Island, in the Hawaiian Islands, during the breeding season. For several years one unsuccessfully attempted breeding with a Laysan albatross (Sanger, 1978). Based on banding records from the Torishima Island colony, the age of two of the birds is thought to be 11 and 14 years old and both behave like reproductively active males (Flint, 1993 in litt.). Other sightings include Laysan Island and French Frigate Shoals, but there is no indication any of these occurrences represent established breeding populations (Sekora, 1977; Fefer, 1989) (refer to Appendix North Pacific Ocean Sightings, 1940-1992).

6. GENERAL HABITAT DESCRIPTION

A. Concise statement of general environment and habitat:

The North Pacific marine environment of the short-tailed albatross is characterized by coastal regions of upwelling and high productivity and expansive, deep water beyond the continental shelf. The region has a clockwise oceanic current flow with counter clockwise currents in the Gulf of Alaska and the Bering Sea.

Very little information is available for comparison among nesting habitats for extant or extinct populations. The Torishima Island colony may typify nesting environments by its remote island isolation, terraces, sparse vegetation, and little or no human disturbance. Torishima Island is an active volcano approximately 403m high and 2.6km wide (DeGange, 1981). The terrain is steep and the soils contain a loose volcanic ash. The island is dominated by a grass, *Miscanthus sinensis var. condensatus*, but a composite, *Chrysanthemum pacificum*, and a nettle, *Boehmeria biloba*, are also present (Hasegawa, 1977).

Historically, short-tailed albatrosses nested on Torishima Island in the flat, sparsely vegetated sites, bordered by steep cliffs (Aronoff, 1960). Volcanic activity in 1903 and 1939 greatly reduced the availability of those sites and, with recent increases in the short-tailed breeding population, the vegetation has deteriorated. There still appears to be a preference for nesting in grassy areas, with present day sites found on the vegetated, but steeper, slopes. The grass is likely to stabilize the soil, provide protection from weather, and minimize mutual interference between nesting pairs while allowing for safe, open take-offs and landings (Hasegawa, 1978).

B. Physical characteristics

The physical characteristics of the North Pacific Ocean vary seasonally and monthly, but most often are described by moderate to high winds, large swells, and a turbulent ocean surface. The region is characterized by intense low pressure systems that produce the winds and updrafts that are critical to sustaining the soaring flight of short-tailed albatrosses. Prevailing winds change seasonally, while the ocean surface current always flows in a clockwise North Pacific Ocean gyre. There are local counter clockwise currents which flow in the Gulf of Alaska and the Bering Sea. The bays and passes, as well as the interface between shallow continental shelf waters and deep, pelagic waters, mark areas of upwelling and high biological productivity along the North Pacific coast (Nelson, 1979).

Breeding sites used by short-tailed albatrosses typically occurs on isolated, windswept, offshore islands with restricted human access.

7. POPULATION BIOLOGY OF THE SPECIES

A. General Summary:

The short-tailed albatross is a large pelagic bird which breeds in the far western North Pacific Ocean on isolated offshore islands. The species ranges throughout the North Pacific Ocean, feeding on surface aggregations of large planktonic organisms and small fishes. Historically, its numbers were estimated to be in the millions, while its present population is probably more than 600 birds. Arrival at the breeding colony is as early as September and birds may leave the colony as late as June or July.

B. Abundance and Distribution:

1. Nonbreeding Population:

An excellent discussion on marine distribution of the short-tailed albatross has been summarized by DeGange (1981). Historically, the species was considered the most common albatross ranging over the United States continental shelf. In the 1880's and 1890's, their abundance and distribution was generalized by statements such as "more or less numerous" in the vicinity of the Aleutians Islands (Yesner, 1976). However, they were reported as highly abundant in the Aleutians by Turner and Elliot. Turner also reported them to be abundant around Cape Newenham, in western Alaska, and Ventaiminov regarded them as abundant near the Pribilof Islands (in DeGange, 1981). In 1904, they were considered "tolerably common on both coasts of Vancouver Island, but more abundant on the west coast" (Kermode in Campbell et al., 1990). Circumstantial evidence from archeological studies of middens also suggests that hunters in kayaks had access to an abundant nearshore supply of short-tailed albatrosses from California north to St. Lawrence Island (Howard and Dodson, 1933; Yesner and Aigner, 1976; Murie, 1959). But, while the pre-exploitation population was estimated to be in the millions, by 1911, fewer and fewer birds were reported in the vicinity of the Aleutians Islands and Bristol Bay, Alaska. This decrease in numbers was paralleled by a decrease in the number of short-tailed bones that were found in local middens. By 1950, it was considered one of the most rare birds in the world (Austin, 1949).

The present marine distribution of nonbreeding short-tailed albatrosses is consistent with the historical North Pacific Ocean pattern. More than 130 confirmed sightings have been recorded from the North Pacific Ocean in 53 years and west coast sightings have become increasingly common: 12 in the 1970's; 55 in the 1980's, and; 48 to 1992 (Hasegawa and DeGange, 1982; Sanger, 1972) (refer to Appendix North Pacific Ocean Sightings). However, along the west coast of United States and Canada in 1990, the short-tailed albatross was still considered

an accidental (Campbell, et al., 1990; Peterson, 1990).

Regions of marine activity may be arbitrarily defined by records of offshore sightings within three major oceanographic regions (McDermond and Morgan, 1993): 1) eastern Pacific Ocean; 2) northern Pacific Ocean; and 3) western Pacific Ocean. Within the three areas, there is a cluster of sightings in the Gulf of Alaska westward to the Aleutian Islands from June through August and there is high use in the vicinity of the breeding colony from December to May. The abundance and distribution of birds within these regions suggest annual temporal and spatial use patterns that are discussed in the section on Migration (Section 7G). It is important to recognize that these sightings may represent an artifact of observer intensity and ship traffic. As a result, it remains questionable whether these areas represent discreet regions within predictable annual movement patterns and are a tentative conclusion on distribution and seasonality.

2. Breeding Population:

The demographics of historical breeding populations of short-tailed albatrosses are obscure due to the inaccuracies in reporting and record-keeping. There are no valid pre-exploitation population estimates from breeding populations distributed in the far western North Pacific (refer to Section 5C.2 Extirpated Populations). Between 1885 and 1903, however, it is known that over 5 million birds were harvested in a 17 year period (Yamashina in Austin, 1949). In the 1880's, the Torishima Island population was estimated to have been over 100,000 individuals (Hattori in Tickell, 1973). By the 1930's, the feather industry had reduced those numbers to less than 50 birds (Tickell, 1975). In 1951, about 100 birds were observed on Torishima Island (Environmental Agency, 1980).

Breeding colony populations provide the basis for estimating the present day global abundance of short-tailed albatrosses. Torishima Island population data were collected in 1992/93, but are not yet available. The combined 1990/91 population count at Torishima and Minami-kojima Islands was 575 birds. Of the 500 individuals at the Torishima colony, there were 230+ breeding adults. Of 75 individuals at the Minami-kojima colony, there we are 30 breeding adults (Hasegawa, 1992). Approximately 9-18% of Laysan and black-footed albatross populations remain at sea during the breeding season as juveniles or immatures (Rice and Kenyon, 1962). Sanger (1972) suggests that the steadily increasing short-tailed population may have disproportionately high numbers of younger aged birds which do not, at their age, return to the colony and, so, are not counted.

Present population numbers indicate an increasing trend. In 1954, there were 54 short-tailed albatrosses at Torishima Island and, in 1991, the number had grown to 500. From 1950-1977, average growth of the Torishima Island colony was 2.5 adults year, while from approximately 1978-1991, there was an average population

increase of 11.0 adults per year. In 1991, the annual increase at Torishima Island was about 6-7%. At this rate, the population will double in about 10 years (Hasegawa, 1992).

C. Reproductive Biology:

Generally, albatrosses require 6 to 9 years to fully mature (Yesner, 1976). Two-year old birds occasionally appear at the breeding colony, but most return at the age of three or four years as nonbreeders. The majority of short-tailed albatrosses initiate breeding between 7 or 8 years of age. The youngest reported successful short-tailed breeding is at five years of age, but the egg failed to hatch (Hasegawa, 1989a, in litt.). From 50-87% of mature Laysan albatrosses breed annually (Rice and Kenyon, 1962; Fisher, 1969). Based on nest site occupation patterns, the majority of short-tailed adult albatrosses probably breed annually, as well (Hasegawa, 1989a, in litt.). Pairs are monogamous and divorce is seldom. Birds arrive at Torishima Island in September and October and begin nest building. They are highly site tenacious, with pairs returning to the same nest year after year. Both sexes build nests, incubate eggs, and brood and feed chicks. The nest is a concave scoop in the earth about .75m (2 ft) in diameter. The nest is lined with soft grass and moss (Tickell, 1975) and annual renovation may accumulate into a large nest mound. Historically, nest sites were open and grassy and "the reed fields... avoided" (Austin, 1949). Egglaying begins in October and continues through early November. The female lays a single egg which is not replaced, if lost. However, there are reports of a small percentage of two-egg nests, of which the second egg may or may not be incubated (Hasegawa, 1980). The egg is 6.5in long and 2.75in wide, and the white shell is very thin and fragile and marked with red spots at one end (Bent in Hasegawa and DeGange, 1982; Austin, 1949)). Incubation involves both parents and lasts for 64-65 days (Hasegawa and DeGange, 1982), during which time the on-duty parent fasts while the other feeds at sea (Austin, 1949). Hatching begins in late December or early January. Records from 1956-1965, indicate hatching success varied from 33% to 75%. The ensuing chick brooding is protracted, lasting for 5 months or longer (Hasegawa and DeGange, 1982). By late May or early June, the chicks are almost full grown and the adults begin abandoning their nests. The chicks fledge soon after the adults leave the colony, departing at night and in favorable winds. By mid-July the colony is totally deserted (Austin, 1949). Approximately 40-70% of the chicks survive to fledge (Hasegawa, [No Date]c, unpubl. data).

D. Growth and Development:

Seabirds, in general, have long life spans, high adult survival, and deferred maturity. There is increasing evidence from banding and tracking of chicks through adulthood, as well as captive bird studies, that short-tailed albatrosses follow this pattern. A few birds are known to be over 40 years old (Harrison,

1979). Adult survivorship is high, approximately 90-95% (Hasegawa, 1985, in litt.; Hasegawa, 1986, in litt.; Hasegawa, 1991a), resulting in many years of potential breeding. Hasegawa (1989a, in litt.) has identified two, three, and, in larger numbers, four-year old birds returning to the colony which may provide important experience in later pair-bonding and other breeding activities.

E. Mortality:

Very little detail is known about mortality factors affecting short-tailed albatrosses. At the breeding colony, chicks may die of several causes: 1) starvation after losing parents, 2) infestation by parasitic insects, and 3) crow predation. According to Austin (1949), one-third of the chicks perish from these combined causes. Adults, as well as chicks, may die from entanglement in brush where they have landed. Inclement weather may cause mortality at sea and it is assumed that young bird mortality is high during this time, particularly, while they learn to forage and survive at sea (Quinlin, 1985).

F. Behavior

1. Breeding:

Short-tailed albatrosses are a colonial nesting species, but little to no information is available to further describe their social behavior or the spatial dynamics of their coloniality. Courtship behavior is considered a highly ritualized series of displays and vocalizations (Haswegawa and DeGange, 1982) and has briefly been described by Palmer (1962) as bill clacking, feet stomping, stretching, bowing, scraping, and nasal groaning.

2. Flight:

Short-tailed albatrosses fly by soaring: gaining height into the wind, turning crosswind, then gaining speed while soaring downwind with decreasing height. They will then bank sharply just above the water to return into the wind with increasing height. This flight pattern can be repeated hour after hour with only occasional wing beats (Tuck, 1978) (refer to Section 7F Foraging). Albatrosses require a running start into a strong wind in order to get airborne from the water, using their feet to assist the take-off.

3. Foraging:

Scent tracking of food takes on a distinctive broad zig-zag flight pattern, soaring crosswind and progressing upwind, which helps direct the bird to the food source. The short-tailed's olfactory senses appear very well developed, and the species displays a keen ability to discriminate between odors. In fact, high levels of

feeding activity are associated with high winds, reduced visibility, and turbulent swells (Hutchison and Wenzel, 1980). Adults feed strictly at or just below the surface of the ocean for squid, fish and other organisms. Observations of black-footed albatrosses show them to feed at the surface by tipping down, similar to a dabbling duck, or extending the wings and completely submerging for a shallow dive in which the wings assist in propulsion (Miller, 1942,). Short-tailed albatrosses likely feed in a similar manner. Their diet consists primarily of shrimp, *Ommastrephes sloani,* squid, fish, and other zooplankton (Hattori in Austin, 1949). Squid rise to the surface at night and the importance of squid in the short-tailed diet suggests short-taileds may have nocturnal feeding habits. At the breeding colony, adults regurgitate oil and liquified food to the nestlings, bill to bill (Austin, 1949). Typical of many seabirds, they drink salt water and excrete excess salt from a nasal gland (Nelson, 1979).

4. Interactions at Sea:

There is little reference to flocking behavior at sea by nonbreeding birds and present-day records indicate they associate only in few numbers. In 1990, however, 14 birds were observed in a group in the Bering Sea (Camp, 1990). Hattori (in Austin, 1949) recorded numerous "large" flocks of breeding birds 5-12 miles offshore of the Torishima breeding colony and Hasegawa (1978) reported rafting by birds in the vicinity of the colony that were variously resting, preening, and bathing.

5. Alarm/Defense:

At sea, they have been reported to be "shy", though are quite guarded and tenacious at their nest (Aronoff, 1960). At the nest, alarmed adults will clack their bills and adults and young will vomit oil and partially digested food (Hattori in Austin, 1949). In general, albatrosses display minimal territorial behavior towards intruders (Nelson, 1979).

G. Migration:

The seasonal movements of short-tailed albatrosses are poorly understood. From December through April, they are thought to be, primarily, located near the breeding colonies in the Izu and Bonin islands (McDermond and Morgan), with breeding birds aggregating in large flocks offshore (Hattori in Austin, 1949). Nonbreeders and failed breeders disperse from the breeding colony in late winter through spring, while successful breeders and fledglings depart from late May through June (Hasegawa and DeGange, 1982). There appears to be a seasonal post-breeding shift in distribution in late spring and early summer which coincides

with an increase in abundance of zooplankton and increasing numbers of higher trophic organisms (Koblentz-Mishke, 1965). The movement is to the northeast towards the Aleutian Islands, the Bering Sea, and east and southward along the west coast of North America as far as Baja, Mexico (Palmer, 1962). Seasonal migration patterns are difficult to discern because of problems in confidently distinguishing between species at different ages and because of the seasonal bias of shipboard observations.

McDermond and Morgan (1993) attempted to generalize seasonality and distribution trends by looking at observer sightings over time. From December through April, short-tailed albatrosses are found primarily in the vicinity of the Izu and Bonin Islands chain coincident with breeding. From June through August, they show a preference for the productive waters of the Aleutians. From 1940 to 1991, 15 of 24 sightings (60%) of the eastern North Pacific sightings occur nearshore between May through September. McDermond and Morgan also suggest that post-breeding dispersal is rapid, based on there being no sightings in the western North Pacific from May through July. There also is some indication that young birds may disperse farther into the eastern and northern North Pacific than adults.

8. POPULATION ECOLOGY

A. Competition:

Intrusion by black-footed albatrosses into the breeding area of the short-tailed albatross at the Torishima colony (Hasegawa, 1982) presents possible interspecific competition for limited nesting sites. Also, Yesner (1976) has suggested competition with Laysan albatrosses because of the only very recent appearance of Laysan albatrosses in the archeological records of the Aleutian Islands. Their appearance in middens coincides with decreases in short-tailed numbers albatross. However, historical patterns of distributions may not be verifiable (refer to Section 11B Interspecific Competition).

B. Predation:

It has been speculated that sharks may take fledgling short-tailed albatrosses as they desert the colony and take to the surrounding waters (Harrison, 1979). The crow, *Corvus* sp. is the only natural terrestrial predator of chicks at Torishima Island (Austin, 1949). Domestic cats are present and rats, *Rattus rattus*, are abundant, but there is no evidence that they prey on either birds or their eggs (Hasegawa and DeGange, 1982).

C. Parasites:

Several parasites have been documented on short-tailed albatrosses at the Torishima Island breeding colony: a blood-sucking tick that attacks its hosts feet; a feather louse, and; a carnivorous beetle (Austin, 1949).

9. CURRENT LANDOWNERSHIP AND MANAGEMENT RESPONSIBILITY

The only two sites used by the short-tailed albatross for breeding, Torishima Island and Minami-kojima Island, are under Japanese ownership and management. Minami-kojima Island, however, has also been claimed by the Nationalist Republic of China and the People's Republic of China. The situation may present logistical and diplomatic problems in attempts to implement a protection plan for the colony on the island (Tickell, 1975).

10. MANAGEMENT PRACTICES

The principle management practices used at the short-tailed albatross colonies on Torishima Island are legal protection, population monitoring, and habitat enhancement. In 1965, Torishima Island was declared a Special National Monument which provides protection for all flora and fauna on the island (King, 1981). Since 1976, Dr. Hiroshi Hasegawa has systematically monitored the breeding success of the short-tailed albatross. In 1981, a project was supported by the Environment Agency of Japan and the Tokyo Metropolitan Government to improve nesting habitat by transplanting grass and stabilize the loose volcanic soils (Hasegawa, 1991a) (refer to Section 14A and 14B Conservation/Recovery Recommendations).

The United States provides a degree of protection for the short-tailed albatross by requiring Endangered Species Act, Section 7, consultation for proposed federal actions outside the 3-mile limit (U.S. Fish and Wildlife Service, Biological Opinion Paper, 1989). The Biological Opinion Paper fully describes the commercial fishing exemption to the prohibition of the Endangered Species Act, Section 9.

11. EVIDENCE OF THREATS TO SURVIVAL

A. Habitat Loss:

Loss of habitat from volcanic disturbance is a threat to recovery of the short-tailed albatross on Torishima Island. In 1902 and 1939 major volcanic eruptions took

place, destroying much of the original breeding colony sites. These events resulted in significant loss of breeding habitat and the condensed use of the few remaining sites. As a result, there was excessive trampling of the vegetation by short-tailed albatrosses, loss of plant cover, and soil erosion.

B. Interspecific Competition:

Based on the appearance of Laysan albatross bones in only the most recent surface layers of middens, Yesner (1976) proposed that the Laysan albatross may have recently expanded its range into that of the short-tailed albatross since the short-tailed's sudden decline between 1880-1900. On Torishima Island, nesting black-footed albatrosses have encroached into the already limited nesting habitat of the short-tailed albatross (Hasegawa, 1982; Tickell, 1975). While this suggests competition for space may be occurring between the two species, the fact that short-tailed albatrosses arrive to establish and re-establish nests six weeks earlier than the black-footed albatross argues against this hypothesis. More information is needed on the relationship between species before competition can be determined as important in regulating the short-tailed population.

C. Exotic Species:

Domestic cats and the Norwegian rat, *Rattus rattus*, have become established on Torishima Island. There is no evidence of predation on birds or eggs and the impacts remain unknown.

D. Commercial Fishing Take:

The commercial bycatch, or incidental take, of albatrosses by the North Pacific fishing industry could impact the short-tailed population. "There is little question that there will be adverse impacts by the commercial fishing industry... particularly in Alaska" (U.S. Fish and Wildlife Service Biological Opinion Paper, 1989). The effects of industry include direct injury or mortality from gear, such as gillnets and long-line hooks. Undoubtedly, most taking of short-tailed albatrosses go unrecognized or unreported, however, there were several documented deaths in the 1980's from gillnet and driftnet entanglement and from hooking and drowning (Hasegawa, 1989b, in litt.; Mendenhall, 1987). This knowledge, combined with their known distribution and surface feeding habits, led the U.S. Fish and Wildlife Service to the conclusion that the greatest potential threat by fisheries is from driftnetting and longlining and, to a lesser degree, trawling and trolling. The Japanese, Korean, and Taiwanese squid and large-mesh fisheries have been responsible for 100,000's of seabird deaths per year, with 17,548 Laysan and 4,426 black-footed albatrosses observed taken in 1990 (Gould, unpubl. data).

E. Plastic Pollution:

Discarded ship debris makes a large contribution to plastic pollution and results in injury or death from plastic ingestion or entanglement. Fry et al. (in U. S. Fish and Wildlife Service, Biological Opinion Paper, 1989) stated, "the endangered short-tailed albatross must be considered at high risk because its foraging range is near Japan and across the Pacific in areas of high density plastic debris." Until 1988, Japan was recognized for its inadequate regulation of dumping of waste at sea (Hasegawa, 1989c, in litt.). Title 2 of Public Law 100-220 of the Marine Plastic Pollution Research and Control Act of 1987, was designed to control this kind of pollution. Regardless, plastic ingestion by short-tailed albatrosses has been documented by Hasegawa in 7 out of 11 chicks examined on Torishima Island (Amaral, 1988). Young birds may be particularly vulnerable to plastic ingestion prior to developing the ability to regurgitate (Fefer, 1989, in litt.). Laysan albatross chicks reported with higher volumes of ingested plastics showed lower fledgling weights than those with lower volumes of ingested plastic. Higher volumes of ingested plastic can reduce ingested food volumes and contribute to chick dehydration (Sievert and Sileo in McDermond and Morgan, 1993), which may affect chick survival. R.H. Day identified albatrosses, in general, to be particularly vulnerable because black-footed and Laysan albatrosses show the highest frequency of plastic ingestion, when compared to 50 other species studied (in McDermond and Morgan, 1993) .

F. Competition with Commercial Fishing:

The commercial fishing industry, particularly the driftnet fisheries, may target squid, fish, or shrimp species which also are preyed upon by the short-tailed albatross. The driftnet fishery in the North Pacific was at one time dominated by the Japanese who, in November 1992, withdrew their effort under pressure from the United Nations. Prior to that time, the Japanese fished 530 boats, the Taiwanese fished 90 boats, and the Koreans fished 130 boats; each boat fishing approximately 50km of net per night (Day, 1993 pers. comm.). Commercially fished walleye pollock, *Theragra chalcogramma*, and sablefish, *Anoplopoma fimbria*, have juvenile stages that occur in surface waters and may provide the prey base used by short-tailed albatrosses. However, the degree of competition, if any, is unknown (U.S. Fish and Wildlife Service, Biological Opinion Paper 1989).

G. Oil Pollution:

Damage or injury related to oil contamination, such as from a spill or leak, could pose a threat to short-tailed albatrosses by causing physiological problems from petroleum toxicity and by interfering with a bird's ability to thermoregulate (Sherburne, 1985). Oil ingested while preening causes diarrhea and kidney and

liver failure. Contamination of the insulating feather and, particularly, down layers results in hyperthermia (Scott, 1993 pers. comm.). From 1980 to 1989, there were 410 commercial fishing boats which became disabled or sank in Alaska waters, and many spilled hundreds or thousands of gallons of petroleum products into the ocean (Pettin in U. S. Fish and Wildlife Service, Biological Opinion Paper 1989). A specific related threat to the short-tailed albatross breeding populations may be oil development in the vicinity of the Senkaku Islands (Hasegawa, 1981, in litt.); a venture which was considered in the early 1980's. This industrial development would introduce the risk of local marine contamination or wide-area pollution due to blow-outs, spills, and leaks related to oil extraction, transfer, and transportation (Sherburne, 1985).

H. Other natural or manmade factors:

Enacting legal protection and increasing existing enforcement may reduce interference with natural population recovery of the short-tailed albatross. At present, the short-tailed albatross is technically not protected inside the 3-mile limit of the United States because it is not federally listed as Endangered within the United States. Also, increased enforcement of existing regulatory mechanisms to eliminate plastics pollution and reduce commercial competition for the short-tailed albatross prey base may be a significant factor affecting the survival of the short-tailed.

II. ASSESSMENT AND RECOMMENDATIONS

12. GENERAL ASSESSMENT OF PRODUCTIVITY

Since 1950, there has been a very slow but increasing trend in the breeding population at Torishima Island. The increase in number of adults has been accompanied by increasing production of young. Table 1 presents growth and productivity trends based on breeding colony monitoring performed by W.L.N. Tickell and Dr. Hiroshi Hasegawa. Since there are inconsistencies in numbers and definitions among sources, data are presented conservatively and most sources are noted.

13. RECOMMENDED CRITICAL HABITAT

At one time, critical habitat would not have been recommended because the short-tailed albatross was considered a peripheral and wide-ranging migratory species that only occasionally entered U.S. waters (Phenicie, 1980, in litt.; U.S. Fish and Wildlife Service Federal Register 45(145) July 25, 1980). However, more recent information indicates short-tailed albatrosses use the nearshore waters of Alaska, Canada, Oregon, and California in increasing numbers. There are 12 confirmed sightings from 1970-79, 55 sightings from 1980-89, and 48 sightings between 1990-92. These sightings are consistent with historic distribution patterns and may occur with seasonal predictability (refer to Section 5A and 5B Geographic Distribution and Appendix North Pacific Ocean Sightings). It is recommended that, coincident with listing within the United States, analysis of sightings should consider the benefits to designating critical nearshore feeding habitat in regions of high marine productivity having relatively high frequency of short-tailed albatross sightings.

14. CONSERVATION/RECOVERY RECOMMENDATIONS

A. General conservation recommendations:

Of approximately 80 known bird extinctions in the past 300 years, 90% have been island species extinctions that have been directly or indirectly caused by humans (Harrison, 1979). Extremely little is known about short-tailed albatross biology and ecology, and the apparent breeding population increase of the short-tailed albatross is not a guarantee of recovery. In view of this fact, several conservation policy recommendations are advanced which could have a positive influence on

TABLE 1

Short-Tailed Albatross Colony Counts at Torishima Island from 1955/56 to 1992/93

Year	Total	Adults	Subadults	Pairs	Nests	Eggs	Chicks	Fledglings	Source
55/56						12	4	3	Tickell, 1975 Hasegawa, 1980
56/57						12	8	8	Tickell, 1975 Hasegawa, 1980
57/58						13	5	5	Tickell, 1975 Hasegawa, 1980
58/59						12	9	9	Tickell, 1975 Hasegawa, 1980
59/60						10	7	0	Tickell, 1975 Hasegawa, 1980
60/61		30				19	9-10	7	Tickell, 1975 Hasegawa, 1980
61/62		35				24-25	11	10	Tickell, 1975 Hasegawa, 1980
62/63		44				23	11	10	Tickell, 1975 Hasegawa, 1980
63/64		44				26	12	11	Tickell, 1975 Hasegawa, 1980
64/65		52				28	12	11	Tickell, 1975 Hasegawa, 1980
65/66		23+							Sanger, 1972
66/67	63								Sanger, 1972
72/73		104±		52±			24		Tickell, 1975
73/74	62	46	13		40+		11	3+	Hasegawa, 1977 Hasegawa 1978 Hasegawa, 1980

TABLE 1 (Continued)

Short-Tailed Albatross Colony Counts at Torishima Island from 1955/56 to 1992/93

Year	Total	Adults	Subadults	Pairs	Nests	Eggs	Chicks	Fledglings	Source
76/77	71	59	2			40+	15		Hasegawa, 1977 Hasegawa, 1978 Hasegawa, 1980 Hasegawa, [No Date]c Unpublished data
77/78	73	61	12			40+	12-20		Hasegawa, 1980 Hasegawa, [No Date]c Unpublished data
78/79	95	68	12				22		Hasegawa, 1980 Hasegawa, [No Date]c Unpublished data
79/80	130	110+	32+		55	50±	20	≤20	Hasegawa, 1982 Hasegawa, [No Date]b Unpublished data Hasegawa, [No Date]c Unpublished data Tsukamoto, 1980 In Litteris
80/81		130			59	54	32	2-32	Hasegawa, 1982 Hasegawa, [No Date]b Unpublished data Hasegawa, [No Date]c Unpublished data Hasegawa and DeGange, 1982
81/82		140				63	21		Hasegawa, [No Date]b Unpublished data Hasegawa, [No Date]c Unpublished data
82/83		150				67	34		Hasegawa, [No Date]b Unpublished data Hasegawa, [No Date]c Unpublished data
83/84		160				65	32		Hasegawa, [No Date]b Unpublished data Hasegawa, [No Date]c Unpublished data
84/85		172				73	51		Hasegawa, [No Date]b Unpublished data Hasegawa, [No Date]c Unpublished data
85/86		165				76	47		Hasegawa, [No Date]b Unpublished data Hasegawa, [No Date]c Unpublished data

TABLE 1 (Continued)

Short-Tailed Albatross Colony Counts at Torishima Island from 1955/56 to 1992/93

Year	Total	Adults	Subadults	Pairs	Nests	Eggs	Chicks	Fledglings	Source
86/87		146+		84		77	53-64		Amaral, 1988 Hasegawa, [No Date]b Unpublished data Hasegawa, [No Date]c Unpublished data
87/88		171				84	57-58	57	Hasegawa, 1988 In litteris Hasegawa, [No Date]a Unpublished data Hasegawa, [No Date]b Unpublished data Hasegawa, [No Date]c Unpublished data
88/89		197-203				89	51		Hasegawa, [No Date]b Unpublished data Hasegawa, [No Date]c Unpublished data
89/90		223				94	50		Hasegawa, [No Date]c Unpublished data
90/91	500	200±		115+		108	66	66	Hasegawa, 1991a Hasegawa, 1992 Hasegawa, [No Date]c Unpublished data McDermond and Morgan, 1993
91/92		232±				115	50±		Williams, 1992 In litteris
92/93		260±				139			Williams, 1992 In litteris

the effectiveness of the recovery program: 1) propose and federally list the short-tailed albatross, 2) improve coordination between the U. S. Fish and Wildlife Service Endangered Species Program and the National Marine Fisheries Service to address the impacts of commercial fisheries and marine pollution; 3) promote and support continued research at and information exchange between scientists interested in study and management of the Torishima Island and Minami-kojima Island colonies; 4) study implications of Japanese regulations and protection plans and establish a working relationship between United States federal agencies and both the Japanese Nature Conservation Bureau within the Environment Agency and the Ministry of Education, Science and Culture to promote and support ongoing research and management in the North Pacific Ocean, 5) study and assess the potential for oil development in and the impact on the Senkaku Islands breeding populations, 6) develop greater information gathering capabilities within the domestic and international fishing industry by improving the ability to monitor location, numbers, and age of short-tailed albatross and apply those data to regulatory and enforcement needs, and; 7) allocate adequate funding to implement the effective management and research actions and activities (refer to Section 14B Further Studies).

B. Monitoring activities and further studies recommended:

1. Research:

Research recommendations have been made by Dr. Hiroshi Hasegawa, principal investigator of the Torishima Island research program. Since 1976, he has directed population biology studies which have monitored egg production, hatching success, reproductive success, recruitment, and survival. Since 1979, nestlings were leg color-banded. Hasegawa further recommends studying 1) the competition between black-footed and short-tailed albatrosses for nesting space, 2) the impacts of exotic rat and cat species, and 3) the relationship between vegetation and reproductive success. Regarding the later effort, Hasegawa (1992) claims the breeding success prior to grass planting varied from 33-59% while, after planting, it increased gradually to an average of 67% by way of reducing egg loss (refer to Section 11A Threats to Survival). Tickell (Tickell and Morton, 1977) first recommended supplementing grass transplanting with controlled use of fertilizer on the basis that albatross excreta would stimulate the growth of grasses and create better nesting conditions.

Continued support also is needed for work at Torishima and Minami-kojima colonies to study age structure, annual survival, reproductive success, food habits, etc. Data on distribution and abundance continue to accumulate and periodic analysis of these data are recommended to detect spatial and temporal patterns of seasonal movements. Also, research is needed to examine the potential for direct and indirect impacts by the fishing industries on albatross population recovery.

Systematic monitoring of the commercial fishing bycatch would provide much needed information to estimate impacts and recommend recovery strategies.

2. Inventory and Monitoring:

Recommendations for inventory and monitoring of short-tailed albatrosses include: 1) continued annually breeding surveys at Torishima and Minami-kojima colonies and 2) systematic survey of all historic breeding areas during the peak of nesting in October and November.

3. Management/Stewardship:

Recommendations for management of the short-tailed albatross include the following: 1) develop an artificial breeding program using decoys at the active breeding colonies (Hasegawa, 1991b, in litt.); 2) manipulate the Torishima site to limit or obstruct intrusion of the expanding black-footed albatross colony into the limited short-tailed breeding site; 3) reintroduce the short-tailed to other historical sites to improve chances of survival and to allow long-term genetic variability; 4) establish a cat and rat extermination program on Torishima Island, and; 5) continue to stabilize soils through grass transplanting efforts at Torishima Island.

15. INTERESTED PARTIES

A. USFWS - Region 7 Alaska
B. USFWS - Alaska Ecological Services
C. Dr. Hiroshi Hasegawa - Toho University
D. Alaska Natural Heritage Program - University of Alaska
E. USFWS - Hawaii Office

III. INFORMATION SOURCES

16. SOURCES OF INFORMATION

Refer to IV References Cited p. 27.

17. SUMMARY OF MATERIALS ON FILE

The UAA/Alaska Natural Heritage Program (AKNHP) has all information contained within this report is electronically stored in the Biological and Conservation Database (BCD). All contact names, citations, and reference materials are documented in the BCD Source Abstract files and most publications are on file in the AKNHP manual files by species.

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APPENDIX

North Pacific Ocean Sightings 1940-1993

The Appendix is a list of short-tailed albatross sightings from 1940-1993 by chronological order within three regions of the North Pacific Ocean: Eastern, Northern, and Western. When possible, the original source has been cited, while other sources are one or more parties removed from the original source. All sightings that have insufficient descriptions, not verifiable or are otherwise questionable have been separated from the authoritative records as "Questionable Sightings". All sightings that were Hawaii land-based are identified with #. For more information on the listed land-based sightings contact the U.S. Fish and Wildlife Service in Hawaii at (808)541-1201. Dr. Hiroshi Hasegawa may have additional sighting records and for further study of location data he can be contacted at Department of Biology, Toho University, Miyama 2-2-1, Funabashi, Chiba, 274 Japan.

APPENDIX

SHORT-TAILED ALBATROSS SIGHTINGS IN THE NORTH PACIFIC OCEAN 1940-1993

EASTERN REGION

Location	Date	Remarks	Source
70 miles off San Francisco 37° 08' N, 124° 29' W	17FEB46	Adult, valid record, adequate character documentation	Traylor, 1950
Gulf of Alaska ca. 59° N, 141° W	25NOV47	Recorded character fit immature bird, record probably valid	Kenyon, 1950
Open ocean at 40° 04' N, 147° 55' E	17MAY51	Adult, characters plainly seen and photographed	MacDonald,1952
40 miles off Vancouver Is.	11JUN60	Immature, distinguishing characters seen and photographed	Lane, 1962
32 miles off Oregon 44° 21.6' N, 124° 50.0' W	11DEC61	Immature, distinguishing characters seen and photographed	Wyatt, 1963
38 miles off southern Washington	03MAY70	Subadult, photographed	Hasegawa and DeGange, 1982

EASTERN REGION

Location	Date	Remarks	Source
Ocean Station Papa, 50° N, 145° W	24JUN71-26JUN71	Immature, photographed, approximate date	Gruchy et al., 1972
100km W of San Diego	28AUG77	Immature	McCaskie, 1978
Monterey Bay, California 36° 14.9' N, 123° 01.8' W	20APR78	Subadult, photographed	Helm, 1980
Gulf of Alaska 58° 40' N, 148° 00'W	08OCT83	One bird	Rowlett, 1983
Gulf of Alaska 58° 45' N, 148° 00'W	13OCT83	One bird	Rowlett, 1983
Gulf of Alaska 58° 45' N, 148° 00'W	14OCT83	Two birds	Rowlett, 1983
Gulf of Alaska 58° 50' N, 148° 00'W	15OCT83	One bird	Rowlett, 1983
Gulf of Alaska 58° 10' N, 148° 25'W	16OCT83	One bird	Rowlett, 1983
Gulf of Alaska 57° 55' N, 148° 50'W	18OCT83	Four birds	Rowlett, 1983

EASTERN REGION

Location	Date	Remarks	Source
120 mi east of Kodiak Island 58° 05' N, 148° 35'W	20OCT83	Seven birds, one identifiable as 1st stage, immature; one identifiable as 2nd stage, juvenile	Rowlett, 1983
Gulf of Alaska 58° 19' N, 148° 28'W	21OCT83	One bird	Rowlett, 1983
Gulf of Alaska 59° 30' N, 143° 30'W	30OCT83	One bird	Rowlett, 1983
Gulf of Alaska 59° 30' N, 143° 20'W	01NOV83	One bird	Rowlett, 1983
Gulf of Alaska 58° 12' N, 148° 29'W	09NOV83	One bird	Rowlett, 1983
Gulf of Alaska 58° 00' N, 148° 35'W	12NOV83	One bird	Rowlett, 1983
Gulf of Alaska 57° 55' N, 149° 00'W	13NOV83	One bird	Rowlett, 1983
Gulf of Alaska 57° 55' N, 149° 25'W	14NOV83	One bird	Rowlett, 1983

EASTERN REGION

Location	Date	Remarks	Source
Near Cape Cross 57° 45.6' N, 136° 57.0 W	28JUN85	Immature w/green band on left leg	Nysewander, 1986
W edge of Cordell Bank 24 mi. W of Pt. Reyes, California	03NOV85 and 05NOV85	One first year, dark band on left leg, approximate date	Campbell, et. al, 1986
230 mi. off Manzanillo, Colima, Mexico	00NOV86	Adult	Santaella & Sada, 1991
Gulf of Alaska 59° 27.71' N, 145° 53.27' W	01OCT87	Banded bird, deceased, recovered on halibut long line hook	Mendenhall, 1987
Western Gulf of Alaska 54° 30.6' N, 159° 15' W	20JUL88	Juvenile	Zenger, 1988
Western Gulf of Alaska 54° 44.33' N, 157° 49.74' W	23JUL88	Juvenile	Zenger, 1988
Approximately 145 km south of Seward 58° 38.17' N, 148° 19.92' W	00AUG88	Juvenile	Long, 1988

EASTERN REGION

Location	Date	Remarks	Source
Approximately 75 km south of Montague Island 59° 10.3' N, 147° 01.3' W	00AUG88	Juvenile	Long, 1988
Ugak Island 57° 23' N, 152° 17' W	03SEP88	Juvenile	MacIntosh, 1992b
North of San Benedicto Island, Mexico 19° 26' N, 110° 44' W	29APR90	Adult	Santaella & Sada, 1991
47° 50' 30" N, 133° 38' 30" W	30JUL91	Immature	Morgan, 1993 pers. comm.
Gulf of Alaska 55° 21.3' N, 134° 44.3' W	21SEP91	Juvenile	Zenger, 1992
Albatross Bank, Kodiak Is. 56° 38' N, 151° 45' W	24MAY92	Juvenile, videotaped	MacIntosh, 1992b
59° 30' N, 142° 32' W	10SEP92	One bird, videotaped	Everhart, 1993

WESTERN REGION

Location	Date	Remarks	Source
Open ocean at 33° 15' N, 140° 12' E	04DEC59	Two adults crossed ships wake	Tramontano, 1970
Open ocean at 30° 02' N, 140° 09' E	17FEB61	One immature, on water	Tramontano, 1970
Open ocean at 33° 35' N, 145° 48' E	30MAR62	One adult and one immature	Tramontano, 1970
Off Honshu at 37° 41' N, 141° 30' E	15DEC63	Juvenile, valid record	Hasegawa and DeGange, 1982
Open ocean at 35° 18' N, 145° 02' E	04FEB66	One adult	Tramontano, 1970
Eastern Is. Midway Atoll	18MAR66	Adult, banded by Chandler S. Robbins; bird had landed on the island	Hasegawa and DeGange, 1982#
34° N, 164° E	05APR69	Subadult, distinguishing characters noted	Sanger, 1972#
Midway Hawaii 28° 10' N, 177° 10' W	Winter 1972-1975	Adult, USFWS banded # 558-30254	Sekora, 1977#

WESTERN REGION

Location	Date	Remarks	Source
Tern Is., French Frigate Shoals, Hawaii, 23° 30' N, 164° 40' W	00NOV75-00FEB76	Immature, approximate date	Sekora, 1977#
Laysan Is., Hawaii 25° 50' N, 171° 40' W	28MAR76	Immature (possibly same as Tern Is.)	Sekora, 1977#
39° 10' N, 145° E	19APR76	Adult and subadult	Hasegawa and DeGange, 1982
Midway, Hawaii	Fall/Winter 77/78, 78/79 79/80, 80/81	Adult (same bird as in 1972-1975)	Hasegawa and DeGange, 1982
Enoshima, Japan, 38° 25' N, 141° 35' E	02AUG78	Dead adult, collected	Hasegawa and DeGange, 1982
33° 55' N, 139° 15' E	23FEB80	Immature, photographed	Hasegawa and DeGange, 1982
28° 40' N, 143° 17' E	17MAR81	Adult	Hasegawa and DeGange, 1982
30° 30' N, 142° 21' E	18MAR81	Immature	Hasegawa and DeGange, 1982
Off Kakuda, Japan 38° 30' N, 141° 45' E	18APR81	Adult	Hasegawa and DeGange, 1982
Midway	Winter, 1981	Juvenile	Hasegawa and DeGange, 1982#

WESTERN REGION

Location	Date	Remarks	Source
Tern Is. French Frigate Shoals	Winter, 1981	Adult	Hasegawa and DeGange, 1982#
31° 26' N, 143° 24' E	23JAN82	Immature, photographed	Hasegawa and DeGange, 1982
150 mi off Miyazaki, Japan 32° 30' N, 134° E	21FEB82	Immature	Hasegawa and DeGange, 1982
Midway Island	21NOVc.87	Adult, white band	Fefer, c.1987/88#
Midway Atoll	1988/1989	Four individual birds	Fefer, 1989#
Midway Atoll	13MAR89-15MAR89	Adults, "white 000" & "yellow 015", approximate date	Fefer, 1989#
28° 12' 35" N, 177° 22' 47" W	26OCT93	One juvenile, band # 015	Nishimoto, 1993, pers. comm.#

NORTHERN REGION

Location	Date	Remarks	Source
Open ocean at 49° N, 176° E	22APR54	Adult, probably valid record	Hasegawa and DeGange, 1982
Amchitka Pass	23MAY68	Adult, characters noted	Hasegawa and DeGange, 1982
Western Aleutians 52° N, 177° 47' E	27AUG76	Adult	Gibson and Byrd, 1977
Bering Sea, 57° 30' N, 177° W	21JUL79	Immature, photographed	Hasegawa and DeGange, 1982
Near Sanak Is., Alaska 54° 02' N, 162° 11' W	29APR80	Adult	Hasegawa and DeGange, 1982
South of Amchitka Pass 50° 46.2' N, 179° 31.0'E	07JUN81	Subadult, photographed	Everett, 1983
Off Atka Island 50° 57' N, 174° 24' E	18JUL82	Immature, photographed	Hasegawa and DeGange, 1982
Bering Sea, 52° 17' N, 177° 23' E	31JUL82	Subadult	Hasegawa and DeGange, 1982
North Pacific Ocean	Summer 1983	One bird	Amaral, 1983
South of Buldir Island 51° 22' N, 175° 46' E	14JUN83	Adult	Gibson, 1983

NORTHERN REGION

Location	Date	Remarks	Source
115 mi. south of Aggattu Island 50° 25' N, 173° 36' E	19JUN83	Two immatures	Gibson, 1983
Bering Sea, 300 mi north of St. Matthews Island	00JUL83	Banded bird, deceased, found in fish net	Low, 1983
6 mi. east of Sheyma Island	06JUL83	Adult	Gibson, 1983
6 mi. west of Kiska Island	00AUG84	One bird	Turner, 1988
South of Unalaska Island 53° 01.4' N, 166° 58.7' W	30JUL87	One bird, photographed	Zenger, 1987
Pervenets Canyon region West of St. Matthews Island 59° 20' N, 178° E	00AUG87	Adult	Turner, 1988
Outer edge, Albatross bank, Kodiak Island	14MAY88	Larger adult with gold head	MacIntosh, 1992b
Western Gulf of Alaska 53° 41.12' N, 164° 32.9' W	12JUL88	Subadult	Zenger, 1988
Near Buldir Island 52° 23' N, 176° 04' E	24JUL88	Subadult, immature between 1st stage and 2nd stage, photographed	Ogi & Fujimura, 1989

NORTHERN REGION

Location	Date	Remarks	Source
Pervenets Canyon region, Bering Sea 59° 20' N, 178° E	00JUL88	Eight birds	Turner, 1988
Between Aggattu Is. & Buldir Is. 52° 25' N, 175° 15' E	05AUG88	Subadult	Wells, 1988
15 nautical mi. due west of the north tip of Seguam Island 52° 25' N, 172° 53' W	15AUG88	Juvenile	Wells, 1988
Eastern Bering Sea 40 nautical mi. southwest of St. Paul Island	14JUL89	One immature w/yellow band on right leg, photographed	MacIntosh, 1989
Eastern Bering Sea near Amak Island	10AUG89	Juvenile	Hasegawa, 1991a
28 Nautical mi. northwest of Amak Is	10AUG89	Immature, photographed	MacIntosh, 1989
South of Umnak Island 52° 00' N, 169° 50' W	04JUN90	Adult, photographed	Camp, 1990
Gulf of Alaska 53° 11.2' N, 166° 53.3 'W	01JUL90	Subadult	Zenger, 1992
Bering Sea 58° 25.4' N, 174° 29.9' W	16JUL90	Immature, photographed	Camp, 1990

NORTHERN REGION

Location	Date	Remarks	Source
North Pacific Ocean 45° 30.9' N, 165° 01.0' W	02SEP90	Subadult	Anderson, 1990c
60° 12' N, 178° 26' W	07SEP90	One juvenile, 2nd stage, photographed	Camp, 1990
Bering Sea 60° 13.0' N, 178° 33.6' W	07SEP90	Three adults, 2 juvenile 1st stage, 6 adults, 1 immature 2nd stage (possibly subadult), 1 immature 1st stage, 10 adults, 2 juvenile 1st stage, 1 juvenile 2nd stage, 1 immature 1st stage, photographed	Camp, 1990
58° 58' N, 177° 56' W	14SEP90	Adult, photographed	Camp, 1990
Eastern Bering Sea 54° 01.5' N, 162° 36.5' W	18JUN91	Of 3, 2 subadults (one bird appeared to have an orange band on right leg Bird #2*)	MacIntosh, 1992a
Eastern Bering Sea 54° 03' N, 162° 38' W	18JUN91	Juvenile, orange band visible on right leg (Bird # 2*)	MacIntosh, 1992a
Eastern Bering Sea 54° 01' N, 162° 38' W	18JUN91	One banded juvenile (Bird # 2*)	MacIntosh,1992a

* MacIntosh (1992) tentatively identified 5 distinct birds over 2 days of observations.

NORTHERN REGION

Location	Date	Remarks	Source
Eastern Bering Sea 54° 00' N, 162° 37' W	19JUN91	One banded juvenile (Bird # 3*)	MacIntosh, 1992a
Eastern Bering Sea 54° 02' N, 162° 41' W	19JUN91	One banded juvenile (Bird # 4*)	MacIntosh, 1992a
Eastern Bering Sea 54° 00' N, 162° 43' W	19JUN91	One banded juvenile, 1 immature (Bird # 3*)	MacIntosh, 1992a
Eastern Bering Sea 54° 00' N, 162° 42' W	21JUN91	One immature (Bird # 5*)	MacIntosh, 1992a
Gulf of Alaska 54° 07.7' N, 161° 38.8' W	23JUL91	Juvenile	Zenger, 1992
Gulf of Alaska 54° 18.8' N, 161° 04.1' W	24JUL91	Juvenile	Zenger, 1992
Gulf of Alaska 54° 18.8' N, 161° 04.1' W	24JUL91	Subadult	Zenger, 1992

* MacIntosh (1992) tentatively identified 5 distinct birds over 2 days of observations.

NORTHERN REGION

Location	Date	Remarks	Source
Gulf of Alaska 54° 21.4' N, 160° 14.8' W	25JUL91	Subadult	Zenger, 1992
Southsoutheast of St. Matthew Is. 59° N, 171° 47' W	25JUL91	Juvenile**	MacIntosh, 1992a
Southsoutheast of St. Matthew Is. 60° N, 171° 56' W	25JUL91	Juvenile**	MacIntosh, 1992a
54° N, 176° W	12AUG91	Confirmed ID, photographed	Gould, 1993 pers. comm.
West of Attu Island	16SEP91	Fifteen - 20 birds	Baker, 1991 in litt.
52° 56.1' N, 170° 58.7' E	00SEP91	Two adults	Baker, 1991 in litt.
Approximately 52° 54' N, 170° 51' E	00SEP91	One subadult	Baker, 1991 in litt.
52° 54.8' N, 170° 50.6' E	00SEP91	One adult	Baker, 1991 in litt.
52° 54.8' N, 170° 50.6' E	00SEP91	Nine birds; 5 adults, 1 sub-adult, 1 juvenile, 2 immatures	Baker, 1991 in litt.
Approximately 52° 54.8' N, 170° 50.6' E	00SEP91	One adult, 1 juvenile	Baker, 1991 in litt.

** Probably the same bird (MacIntosh, 1992)

NORTHERN REGION

Location	Date	Remarks	Source
53° 04' N, 170° 52' E	00SEP91	One adult	Baker, 1991 in litt.
51° 52' N, 173° 44' W	28MAY92	One bird, videotaped	Everhart, 1993
53° 39' N, 165° 16' W	10JUN92	One immature	Gould, 1992
Off the Northern Coast of Atka Island 52° 29' N, 173° 46' W	12JUN92	Subadult, adult	Williams, 1992
53° 00' N, 167° 24' W	16JUN92	Two adults, 2 sub-adults, 1 immature	Gould, 1992
53° 58' N, 167° 39' W	17JUN92	Two immature	Gould, 1992
53° 37' N, 165° 14' W	26JUN92	One subadult	Gould, 1992
53° 25' N, 165° 54' W	01JUL92	One immature, 1 adult	Gould, 1992
52° 20' N, 175° 50' E	00JUL92-07JUL92	One adult, light green band, approximate date	Williams, 1993 pers. comm.
53° N, 171° E	05JUL92	One adult	Williams, 1993 pers. comm.
52° 34' N, 169° 10' W	18JUL92	One bird, videotaped	Everhart, 1993
53° 09' N, 166° 43' W	20JUL92	One bird, videotaped	Everhart, 1993

NORTHERN REGION

Location	Date	Remarks	Source
53° 24' N, 165° 46' W	20JUL92	Two birds, videotaped	Everhart, 1993
53° 26' N, 165° 50' W	21JUL92	Two birds, videotaped (could be the same as 20JUL92)	Everhart, 1993
54° 05' N, 161° 42' W	24JUL92	Two birds, videotaped	Everhart, 1993
Between Buldir Is. and Sheyma Is. 52° 27' N, 175° 45' E	08AUG92	Two immature (1st year)	Williams, 1992

QUESTIONABLE SIGHTINGS

EASTERN REGION

Location	Date	Remarks	Source
Gulf of Alaska	09JUN40	Nominal record, no distinguishing characters noted	Gabrielson, 1944
Off SE Alaska at 57° 30' N, 130° 14' W	14MAY56	Immature, nominal record, distinguishing characters limited	Sanger, 1964
Open ocean at 32° 33' N, 138° 05' W	10APR62	"Young bird", no distinguishing characters indicated	Hasegawa and DeGange, 1982
25 km off Westport, Oregon	30SEP78	Doubtful record	Hunn and Mattocks, 1979
Chiniak Bay, east of Kodiak Is.	00JUN89-00JUL89	Two adults, secondhand report from fisherman	Anderson, 1990a
Off Farallon Island, California	No Date	Adult	Fefer, no date
Southeast of Marmot Island/Nuka Island	1990	"Some birds" fisherman's report	Anderson, 1990b

QUESTIONABLE SIGHTINGS

NORTHERN REGION

Location	Date	Remarks	Source
Near Western Aleutians	16JUN44 07JUL44	Distinguishing marks not noted, not definitive	Arnold, 1948
SW Attu Is.	13AUG62	Discounted for lack of distinguishing characters	Boggs and Boggs, 1964
NE Attu Is.	16AUG62	Characters noted, but could apply to Laysan	Boggs and Boggs, 1964
Off Kagalaska Is., c. Aleutian Is.	26JUN78	Subadult, not a positive ID	Hasegawa and DeGange, 1982
North Pacific Ocean	Summer 1983	Three separate sightings, no description	Amaral, 1983
Sighted from M/V Tiglax	23AUG90	No description	Hasegawa, 1991b
20 mi. south of Nikolski	1990	"Several", fisherman's report, photograph not verified	Anderson, 1990b
40 mi west of St. Paul Island	1990	"One bird" fisherman's report	Anderson, 1990b

QUESTIONABLE SIGHTINGS

WESTERN REGION

Location	Date	Remarks	Source
12 miles SW Kushiro, Hokkaido	18APR57	Quoted from an earlier author, no distinguishing characters noted. A second hand report from a fisherman; questionable record.	Hasegawa & DeGange, 1982

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